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10/583,265	06/16/2006	Alain Carof	4590-547	9118

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EXAMINER	
YUNG, LISA S	

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4182	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,265	CAROF, ALAIN	
	Examiner	Art Unit	
	LISA YUNG	4182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06/16/2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/16/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 06/16/2006 has been received. However, the listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Specification

1. The abstract of the disclosure is objected to because the length exceeds the 150-word limit. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities:

   a. Page 2 equation [1] should be $\theta_3 = k.\lambda/L$; likewise, Page 2 lines 32-3 should be "θ_3 is …" and "λ is ...", respectively;

   b. Page 3 lines 19-21: In the sentence beginning with "Stated otherwise", "the transmitted power being moreover constant" is grammatically incorrect; a suggested correction would be, "the transmitted power becomes more constant";

   c. Page 3 line 33: "an array antenna" should be "an antenna array";

   d. Page 4 equation [2], Page 1- line 16 and equations [10-12], Page 12 equations [13-14]: "#" is an unconventional symbol for approximation; "≈", for instance, is more conventional;

   e. Page 7 line 17: "distance A" is labeled in FIG. 2 as "DL";

   f. Page 10 line 31: "transmitters 2" should be singular;

   g. Page 12 line 28: "Transmitted" should be lowercase;

   h. Page 12 line 32: "(T2-T1)" should be "(T_2-T_1)";

   i. Page 14 line 5: "Image" should be lowercase; and

   j. Page 16 line 2: "Δfr" should be "ΔFr".

   Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: FIG. 2 distance "DL" is not found in the specification; instead, the specification refers to "distance A", which is not shown. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 9 and 16 are objected to because of the following informalities:

a. in claim 9 line 8, "echos" should be "echoes"; in lines 10-11, "the position of a the object" should be "the position of the object".

b. in claim 16 line 6, "echos" should be "echoes"; in line 9, "the position of a the object" should be "the position of the object".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 14 recites the limitation "said system comprising devices according to claim 1" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim, as claim 1 has been cancelled. However, upon further inspection, claim 1 and claim 9 are essentially the same, the discernible difference being that claim 9 no longer has reference numbers. Thus, for the purposes of this examination, "said system comprising devices according to claim 1" will be interpreted as "said system comprising devices according to claim 9."

7. Claim 17 recites the limitation "each receiver having a reception band suitable for one of the transmission frequencies" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim, as claim 15 depends on claim 9, which only claims "an acoustic receiver".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Walsh (US 3,886,487).

Regarding claim 9, Walsh teaches: "An avoidance device of ship, allowing said ship the avoidance of floating or slightly submerged objects situated on its route of the ship or in a zone close to this route comprising (**Abstract discloses an anti-collision sonar system adapted for navigating a ship in shallow waters. Col. 2 lines 7-13 disclose that the forward- and downward-looking sonar system coordinates received data with the relative motion between the ship and reflecting objects in the ocean. At shallow depths, these objects can be considered as slightly submerged**):

"two transmitters of acoustic waves spaced apart from one another (**according to Col. 2 line 60 to Col. 3 line 2, FIG. 1 shows a sonar system 24 with a pair of transducers 34 and 36 mounted in the hull of the ship 20, which are part of the Doppler sonar 38; these transducers emit beams 30 and 32 of sonic energy in a downward direction. Looking at FIG. 1, transducers 34 and 36 appear to be spaced apart**),

an acoustic receiver, whose reception band is suitable for the transmission frequencies of the transmitters (**according to Col. 4 line 66 to Col. 5 line 8, FIG. 3 shows a block diagram of sonar 38 which comprises a pair of receivers 102A-B, which receive reflected signals from transducers 34 and 36, respectively**),

means of processing of the received signals, said processing means making it possible to perform, through the echos received, a measurement of the difference of the propagation times of the waves transmitted by each of the transmitters as well as a measurement of the Doppler effect which affects each of the transmitted waves; said processing means thus determining the position of a the object having returned an echo (**Col. 5 lines 31-37 disclose that receivers 102A-B measure the Doppler frequency. Col. 6 lines 5-12 disclose that the sonar system measures**

the round trip propagation time of signals along beams 30 and 32, and hence the ranges from the transducers 34 and 36 to the points of reflection from the ocean bottom 46 of their respective signals, from which a range measurement can be made. The system also comprises a forward-looking sonar 28, as pictured in FIG. 5, which receives data from doppler sonar 38 shown by path 76; according to Col. 8 lines 2-6 and Col. 12 lines 52-57, this data represents the ship's speed, and the forward-looking sonar uses this in its measurement of the range of a reflecting object 266 in front of the ship)."

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh (US 3,886,487) in view of Klein (US 3,832,709).

Regarding claim 10, Walsh teaches the device of claim 9 (**see above**) but makes no mention of said processing means calculating the temporal deviation and the Doppler frequency deviation between the two waves reflected by said object.

Klein, however, discloses a motion detection apparatus, "wherein said processing means determine the position of an object on the basis of the calculation of the temporal deviation ΔT and of the Doppler frequency deviation ΔFd existing between the two waves reflected by said object, a reflected wave originating from the first transmitter, and the other reflected wave

originating from the second transmitter (**Col. 4 lines 40-49 disclose that provided a given difference in frequency exists between the two transmitted signals, the phase difference – or, time distance -- between the first and second Doppler signals, produced as the result of reflection of moving objects, is linearly dependent upon the distance between the moving object and the Doppler radar apparatus. Moreover, the direction of motion of the moving object determines which of the two recovered Doppler signals will lead or lag the other Doppler signal in phase**)."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to calculate the temporal deviation and the Doppler frequench deviation between the two reflected waves with the motivation to determine the range of the target as well as the direction in which it is moving relative to the transmitting apparatus (**Col. 2 lines 38-43**).

Regarding claim 11, refer to claim 10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the two transmitters emit waves of distinct frequencies with the motivation to produce distinct Doppler signals which are individually detectable (**Col. 4 lines 14-18**).

Regarding claim 12, refer to claim 10.

12. Claims 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh (3,886,487) in view of Lang (3,623,444).

Regarding claim 13, refer to the discussion of claim 13 under 35 U.S.C. 112 above.

Walsh teaches the device claimed in claim 9 (**see above**) but makes no mention of a multihull ship on which the transmitters are disposed.

Lang teaches "a multihull ship comprising … two transmitters of acoustic waves being disposed on different hulls and the acoustic receiver being disposed on any one of the hulls (**Col. 4 lines 1-5 disclose that in FIG. 1, a pair of essentially tubular-shaped parallel submerged hulls 40 and 50 provide a buoying support for a platform hull 20. Col. 8 line 72 to Col. 9 line 6 disclose that sonar devices 70 could be mounted at longitudinal and lateral extremes of the hulls and platform. It is inherent that a sonar device comprises a transmitter and a receiver**)." It would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose transmitters on different hulls of a multihull ship with the motivation to monitor ambient wave conditions (**Col. 8 lines 72-75**).

Regarding claim 14, Walsh teaches the device claimed in claim 9 (**see above**) but makes no mention of permitting said ship to detect and avoid objects approaching at a high speeds.

Lang teaches a high-speed marine vessel having improved static and dynamic stability with submerged hulls for dynamic stability over wide ranges of speed under adverse sea states (**Col. 1 lines 59-63 and lines 73-75**). As mentioned in the discussion of claim 13 above, Lang also discloses parallel submerged hulls on which sonar devices could be mounted; thus, one device would be mounted on each side of the ship (**Col. 4 lines 1-5, FIG. 1, Col. 8 line 72 to Col. 9 line 6**). Because the vessel is high-speed, objects in the water may be interpreted as approaching at high speed; therefore, replacing Lang's sonar devices with Walsh's specialized avoidance devices would enable one to detect objects approaching at a high speed.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement avoidance devices on each side of a ship with the motivation to broaden the range of conditions under which obstacles may be detected to ensure marine vessel safety.

Regarding claim 16, Walsh teaches "a device for avoidance of submerged obstacles ... using acoustic waves (**Abstract discloses an anti-collision sonar system adapted for navigating a ship in shallow waters. Col. 2 lines 7-13 disclose that the forward- and downward-looking sonar system coordinates received data with the relative motion between the ship and reflecting objects in the ocean. At shallow depths, these objects can be considered as slightly submerged**), comprising:

a transmitter of acoustic waves … (**according to Col. 2 line 60 to Col. 3 line 2, FIG. 1 shows a sonar system 24 with a pair of transducers 34 and 36 mounted in the hull of the ship 20, which are part of the Doppler sonar 38; these transducers emit beams 30 and 32 of sonic energy in a downward direction**),

two acoustic receivers … (**according to Col. 4 line 66 to Col. 5 line 8, FIG. 3 shows a block diagram of sonar 38 which comprises a pair of receivers 102A-B, which receive reflected signals from transducers 34 and 36, respectively**),

means of processing of the received signals, these means making it possible to perform, through the echos received by each of the receivers, a measurement of the difference of the propagation times to the two receivers of the transmitted wave, as well as a measurement of the Doppler effect which affects each of the received waves; these processing means thus determining the position of a the object having returned an echo (**Col. 5 lines 31-37 disclose that receivers 102A-B measure the Doppler frequency. Col. 6 lines 5-12 disclose that the sonar system measures the round trip propagation time of signals along beams 30 and 32, and hence the ranges from the transducers 34 and 36 to the points of reflection from the ocean**

bottom 46 of their respective signals, from which a range measurement can be made. The system also comprises a forward-looking sonar 28, as pictured in FIG. 5, which receives data from doppler sonar 38 shown by path 76; according to Col. 8 lines 2-6 and Col. 12 lines 52-57, this data represents the ship's speed, and the forward-looking sonar uses this in its measurement of the range of a reflecting object 266 in front of the ship)." Walsh makes no mention of implementing said transmitter and receivers on different hulls of a multihull ship.

Lang teaches "a multihull ship comprising … a transmitter of acoustic waves disposed on one of the hulls, and two acoustic receivers disposed on different hulls (**Col. 4 lines 1-5 disclose that in FIG. 1, a pair of essentially tubular-shaped parallel submerged hulls 40 and 50 provide a buoying support for a platform hull 20. Col. 8 line 72 to Col 9 line 6 disclose that sonar devices 70 could be mounted at longitudinal and lateral extremes of the hulls and platform. It is inherent that a sonar device comprises a transmitter and a receiver**)."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose transmitters on different hulls of a multihull ship with the motivation to monitor ambient wave conditions (**Col. 8 lines 72-75**).

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh (US 3,886,487) in view of Miura (US 3,673,553).

Walsh teaches the invention of claim 9 (**see above**) but makes no mention of positioning the device at the entrance of a port.

Miura teaches "a ship positioning control system, for controlling the entrance of a port comprising at least one device ..., said device being positioned at the entrance of the said port

(Col. 2 lines 21-29 disclose a measuring instrument for piloting a ship for docking with which the direction of the ship and its speeds approaching a pier and the distances between it and the pier are simultaneously measured by at least two ultrasonic transducers installed on the pier. According to Col. 3 lines 19-25, FIG. 1 transducers 7 and 8 emit signals, which are reflected by ship 5; from these signals, the distance between each of the transducers and the ship is obtained from the measured time)."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to position a avoidance device on the entrance of a port with the motivation to implement an economical -- as in, more cost-effective and less bulky -- measuring instrument for piloting a ship for docking (**Col. 1 lines 42-49**).

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walsh (US 3,886,487) in view of Miura (US 3,673,553), and in further view of Klein (US 3,832,709) and Kaplan (US 4,290,0493).

Walsh and Miura teach the device of claim 15 (**see above**). Walsh and Miura make no mention of having the transmitter transmit two waves of different frequencies.

Klein teaches a motion detection apparatus, "wherein the transmitter transmits two waves of different frequencies, each receiver having a reception band suitable for one of the transmission frequencies (**Col. 4 lines 40-49 disclose that provided a given difference in frequency exists between the two transmitted signals, the phase difference – or, time distance -- between the first and second Doppler signals, produced as the result of reflection of moving objects, is linearly dependent upon the distance between the moving**

object and the Doppler radar apparatus. Moreover, the direction of motion of the moving object determines which of the two recovered Doppler signals will lead or lag the other Doppler signal in phase)." It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the transmitter simultaneously emit waves of distinct frequencies with the motivation to produce distinct Doppler signals which are individually detectable (**Col. 4 lines 14-18**).

Walsh, Miura, and Klein, however, make no mention of simultaneously transmitting two waves of different frequencies. Kaplan, however, discloses a marine obstacle detector in which the transmitter emits both ultraviolet and infrared frequencies simultaneously (**Col. 6 lines 43-50**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to emit two waves of different frequencies simultaneously with the motivation to transmit more average power out, thereby receiving a greater percentage of returned power (**Col. 6 lines 50-56**).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Delignieres (US 4,559,621), which discloses an acoustic method for determining the position of a submerged objected at a great depth from a ship; and

Brown (US 5,160,931), which discloses a method of detecting non-surface objects using radiant ranging in which Doppler frequency shifts and slant ranges are calculated.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LISA YUNG whose telephone number is (571)270-1467. The examiner can normally be reached on Mon-Fri 7:30AM-5PM, Alt. Fri., Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thu Nguyen can be reached on 571-272-6967. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lisa Yung/ 01/31/2008
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